

possible, drains for its own use the entire cerebral activity.

Attention from the first has had a biological value.

"Any animal so organized that the impressions of the external world were all of equal significance to it, in whose consciousness all impressions stood upon the same level, without any single one predominating or inducing an appropriate motory adaptation, were exceedingly ill-equipped for its own preservation."

Attention has thus been a factor in the progress of life, or, as Prof. Ribot puts it epigrammatically, attention is a condition of life. In the lower animals, under normal conditions, attention is for the most part spontaneous; or, to use the author's alternative term, natural. One may perhaps say that in natural or spontaneous attention the motive or interest is inherent, while in voluntary or artificial attention it is extraneous. And the process by which voluntary attention is developed is by rendering attractive by artifice what is not attractive by nature; by giving an artificial interest to things that have not a natural interest. This, too, is a factor in progress; this, too, has a biological value.

"In the course of man's development from the savage state, so soon as (through whatever actual causes, such as lack of game, density of population, sterility of soil, or more warlike neighbouring tribes) there was only left the alternative of perishing or of accommodating oneself to more complex conditions of life—in other words, going to work—voluntary attention became a foremost factor in this new form of the struggle for existence. So soon as man had become capable of devoting himself to any task that possessed no immediate attraction, but accepted as only means of livelihood, voluntary attention put in an appearance in the world. It originated, accordingly, under the pressure of necessity, and of the education imparted by things external."

We have thought it more just to our author, and more satisfactory to our readers, to give some account of Prof. Ribot's main theses with which we are in full sympathy, than to select minor points, of which there are but few, in which we differ from his conclusions. The translation is, on the whole, satisfactory, but some expressions, such as "the marrow and the bulb" (for the spinal cord and medulla), "moderatory centres," and "the fundament of emotional life rests in tendencies," &c., strike one as somewhat unusual.

C. LL. M.

OUR BOOK SHELF.

Handleiding tot de Kennis der Flora van Nederlandsch Indië: Beschrijving van de Families en Geslachten der Nederl. Indische Phanerogamen. Door Dr. J. G. Boerlage. Eerste Deel, Eerste Stuk. "Ranunculaceæ—Moringaceæ." Pp. 312. With an Index. ("Introduction to a Knowledge of the Flora of the Dutch East Indies." (Leyden: E. J. Brill, 1890.)

THIS is the first part of a work consisting of descriptions of the natural orders and genera of flowering plants represented in the Dutch East Indies. A work thus limited must necessarily be of limited utility; but we have Dr. Treub's testimony in a preface thereto that he regards it as a highly useful forerunner of a new Flora of the country. It is nearly five-and-thirty years since Miquel began publishing his "Flora," and the last part of it appeared in 1860, before Bentham and Hooker's "Genera Plantarum" commenced; and systematic botany gener-

ally has experienced extraordinary development since then. Further, one of the great advantages claimed for the present work is that it is wholly in Dutch. It is based on Bentham and Hooker's "Genera Plantarum," and we find on comparison that the ordinal, tribal, and generic definitions are to a great extent translations, though later additions to the flora, both in genera and species, have not been neglected. Dr. Boerlage's book will also be useful to the phytographer, as it is already something to have a synopsis of the genera found in the large eastern area under Dutch dominion. Geographically, the next descriptive "Flora" of the region should include the whole of "India aquosa," which means, at least, an examination of the plants of the whole of tropical Asia, of tropical Australia, and of Polynesia. Such a work, on lines similar to Hooker's "Flora of British India," would be of immense value; but it requires qualified men, with sufficient time, money, and ample materials from the whole area. W. B. H.

The Elements of Laboratory Work. By A. G. Earl, M.A., F.C.S. (London: Longmans, Green, and Co., 1890.)

THIS volume is of such a character that the reader is at once tempted to seek for its excellences rather than for its weak points. It aims at presenting "an introduction to all branches of natural science," and is intended to be used as a hand-book in the laboratories of public schools that have well-equipped rooms devoted to practical science. The author says in his preface that such rooms "are nowadays considered a necessary part of all public schools and colleges." Granting that this is the case, that the teacher is good, and that his pupils are already highly trained and anxious to learn pure science for its own sake, this volume might be accepted as an excellent guide. It is marked by a total absence of the "familiar examples" which we have hitherto associated with elementary scientific works. The student is made to accustom himself to technical language from the very first. For example, "a set of weights," is, on p. 2, explained as being "a number of bodies so arranged," &c.; and a few paragraphs further on the student is directed to "verify the graduation of a burette," and is introduced to reading telescopes and cathetometers. The first introduction of the student to chemical changes is an experiment consisting of the ignition of silver nitrate with quantitative observations, the second experiment is similar but with silver iodate, and the third is the heating of silver nitrate in a closed tube over a small Bunsen flame. In an explanation of the significance of what are commonly known as atomic weights and molecular weights, the expressions atomic masses and molecular masses are used. We do not see the advantage of this novel nomenclature. If the volume had an index, we should be prepared to recommend it in unqualified terms for the use of school-boys who can carry out such instructions as the following: "Perform experiments illustrating the law that chemical combination takes place between definite quantities of different kinds of matter."

Magnetism and Electricity. Part II. Voltaic Electricity. By Prof. Jamieson, M.Inst.C.E., &c. (London: Griffin and Co., 1890.)

IF the third part of this work prove equal in excellence to the two already published, Prof. Jamieson may claim to have produced one of the best introductory text-books on the subject. Like its predecessor, Part II. treats the subject in an essentially practical way. A competent electrician himself, the author is well able to understand the difficulties which beginners are likely to meet with, and his attempts to make obscure things clear will probably be found highly successful. The theoretical side of the subject is carefully considered, and no important application of a principle is passed over without reference.